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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MICHAEL ANTHONY PUGEL

Appeal 2008-0245
Application 09/853,001¹
Technology Center 2600

Decided: July 29, 2008

Before ROBERT E. NAPPI, MARC S. HOFF, and KARL D. EASTHOM,
Administrative Patent Judges.

HOFF, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF CASE

Appellant appeals under 35 U.S.C. § 134 from a Final Rejection of claims 19, 20, and 22-38.² We have jurisdiction under 35 U.S.C. § 6(b).
We affirm.

Appellant's invention relates to a system for extending the effective operating distance of an infrared remote control system (Spec. 1). A first

¹ Application filed May 10, 2001. The real party in interest is Thomson Licensing S.A.

² Claims 1-18 and 21 have been canceled.

transmitter receives IR signals from a remote control unit and transmits a corresponding RF signal which includes data concerning the IR carrier frequency used, rather than directly transmitting the actual IR carrier frequency, permitting a reduction of the RF bandwidth (Spec. 1-2). An RF receiver decodes the received signal and uses the received data to configure an IR control signal compatible with and transmitted to the controlled device (Spec. 2).

Claim 19 is exemplary:

19. A control device for extending an effective control range of a first control device for controlling an IR controllable device, the control device comprising:

a receiver for receiving from the first control device a first control signal having a first data segment for control information; and

means for extracting an IR carrier frequency from the first control signal and means for transmitting a RF signal having a second data segment for the control information and the IR carrier frequency, wherein the RF signal is adapted to be received by a second control device that converts the RF signal into an IR control signal for controlling the IR controllable device, the IR control signal having an IR carrier with the IR carrier frequency and having a data segment for the control information.

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Smith	US 4,856,081	Aug. 8, 1989
Harrington	US 4,897,883	Jan. 30 1990
Tigwell	US 5,227,780	July 13, 1993
Anderson	US 6,130,910	Oct. 10, 2000
Eisaku	JP 2001-8278A	Jan. 12, 2001
Thomas	US 6,400,480 B1	Jun. 4, 2002

Claims 19, 23-28, and 33-37 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Harrington in view of Tigwell, Eisaku, and Smith.

Claims 19, 20, 22, 33-35, 37, and 38 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Thomas in view of Tigwell, Eisaku, and Smith.

Claims 29-32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Harrington in view of Tigwell, Eisaku, Smith, and Anderson.

Claims 29-32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Thomas in view of Tigwell, Eisaku, Smith, and Anderson.

Appellant contends, *inter alia*, that because Harrington and Thomas teach FM transmission, motivation to adopt the AM transmission and “7-bit work scheme” taught by Tigwell is lacking (Br. 7, 15); that various individual references do not teach certain elements of the invention; and that Tigwell and Smith teach away from combination with Harrington, because doing so would mean adding microprocessors and associated software/firmware (Br. 8, 9, 10, 12).

Rather than repeat the arguments of Appellant or the Examiner, we make reference to the Brief (filed November 13, 2006) and the Answer (mailed February 13, 2007) for their respective details.

ISSUE

There are two principal issues in the appeal before us.

The first issue is whether the Examiner erred in holding that the combination of Harrington, Tigwell, Eisaku, and Smith teaches the claimed invention.

The second issue is whether the Examiner erred in holding that the combination of Thomas, Tigwell, Eisaku, and Smith teaches the claimed invention.

FINDINGS OF FACT

The following Findings of Fact (FF) are shown by a preponderance of the evidence.

The Invention

1. According to Appellant, the invention relates to a system for extending the effective operating distance of an infrared remote control system (Spec. 1).
2. A first transmitter receives IR signals from a remote control unit and transmits a corresponding RF signal which includes data concerning the IR carrier frequency used, rather than directly transmitting the actual IR carrier frequency, permitting a reduction of the RF bandwidth (Spec. 1-2).
3. An RF receiver decodes the received signal and uses the received data to configure an IR control signal compatible with and transmitted to the controlled device (Spec. 2).

Harrington

4. Harrington teaches extending the operational range of an infrared data link beyond line-of-sight by transmitting a corresponding signal by radio, which signal is received and re-converted to an infrared signal to control the desired device (col. 1, ll. 48-68).

Tigwell

5. Tigwell teaches an apparatus for controlling a plurality of infrared controlled appliances, including a UHF radio transmitter remote controller having a plurality of separate distinct output control signals (col. 1, l. 66 – col. 2, l. 2).

6. Tigwell teaches transmitting remote control commands via radio frequency (col. 2, ll. 48-64).

7. Tigwell teaches that it is not desirable to control the infrared controlled device directly via UHF as the modulation of the infrared code onto a UHF radio frequency carrier would result in an occupied band width which would exceed FC rules (col. 2, l. 65 – col. 3, l. 2).

Eisaku

8. Eisaku teaches receiving a remote control code from a code recognition circuit, reading the carrier frequency that corresponds to the remote control code from a memory, and transmitting a remote control code with the carrier frequency information to a conversion circuit (Fig. 8³).

9. Eisaku teaches a message format for transmitting carrier information and remote control code to a remote control device (Fig. 9).

10. Eisaku teaches extraction of IR carrier frequency information from an RF signal (para. [0033]).

Smith

11. Smith teaches a single remote control apparatus which can quickly learn the transmission code for, and thereafter operate, remotely

³ Citations to Eisaku refer to the translation in the record.

controllable consumer products without modification or interconnection of those products (col. 2, ll. 6-10).

12. Smith teaches a method for determining carrier frequency (col. 13, l. 44 – col. 14, l. 6).

Thomas

13. Thomas teaches a mobile transceiver for extending the operational range of an infrared remote controller (Abstract), which includes retransmitting infrared remote control commands via RF and converting them back to IR for transmission to the controlled device (see Fig. 1).

PRINCIPLES OF LAW

“Section 103 forbids issuance of a patent when ‘the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.’” *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1734, (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, (1966). *See also KSR*, 127 S.Ct. at 1734 (“While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.”)

The determination of obviousness must consider, *inter alia*, whether a person of ordinary skill in the art would have been motivated to combine the

prior art to achieve the claimed invention and whether there would have been a reasonable expectation of success in doing so. *Brown & Williamson Tobacco Corp. v. Philip Morris, Inc.*, 229 F.3d 1120, 1124 (Fed. Cir. 2000). *Medichem S.A. v. Rolabo S.L.*, 437 F.3d 1157, 1164 (Fed. Cir. 2006). Where the teachings of two or more prior art references conflict, the Examiner must weigh the power of each reference to suggest solutions to one of ordinary skill in the art, considering the degree to which one reference might accurately discredit another. *In re Young*, 927 F.2d 588, 591 (Fed. Cir. 1991). If the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984). Further, our reviewing court has held that “[a] reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.” *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994); *Para-Ordnance Mfg. v. SGS Importers Int’l*, 73 F.3d 1085, 1090 (Fed. Cir. 1995). “The prior art’s mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed in the ... application.” *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004).

ANALYSIS

§ 103 rejection over Harrington, Tigwell, Eisaku, and Smith

We select claim 19 as representative of this group, pursuant to our authority under 37 C.F.R. § 41.37(c)(1)(vii).

Appellant argues that Harrington does not disclose that its repeater extracts an IR carrier frequency from the first control signal (Br. 6); that Tigwell does not teach that its data segment includes control information extracted from an IR control signal and does not include IR carrier frequency (Br. 7); that Eisaku does not disclose or suggest means for extracting an IR carrier frequency from the first control signal (Br. 9); and that Smith does not disclose or suggest transmitting a RF signal having a data segment for the extracted control information and extracted IR carrier frequency (Br. 11).

Each of Appellant's statements is accurate, but none is persuasive to show error in the Examiner's rejection, because the Examiner relies upon other reference(s) for teaching or suggestion of each of those elements. We agree with the Examiner's position that Harrington teaches transmitting remote control commands received from an infrared remote control via radio frequency (Ans. 3; FF 4); that Tigwell teaches that it is not desirable to control the infrared controlled device directly via UHF as the modulation of the infrared code onto a UHF radio frequency carrier would result in an occupied band width which would exceed FC rules (Ans. 3; FF 7); that Eisaku teaches a message format for transmitting carrier information and remote control code to a remote control device (Ans. 3; FF 9); and that Smith teaches a method for determining carrier frequency (Ans. 3; FF 12).

Appellant argues that since Harrington uses FM transmission rather than AM, there would be no motivation to modify Harrington to include the teachings of Tigwell (who uses AM), because the problem of violating FCC regulations asserted by the Examiner would not exist (Br. 7). We are not persuaded by Appellant's argument because, as explained in the Examiner's Answer, the violation of FCC regulations does not arise because of the use of amplitude modulation rather than frequency modulation but because, if the IR carrier frequency were simply converted into RF and transmitted, the transmitted signal would occupy too great a bandwidth to comply with FCC regulations (Ans. 9-11). We therefore agree with the Examiner that one of ordinary skill would have been motivated to encode IR carrier frequency in a short message, as taught by Eisaku, to avoid sending RF signal in a bandwidth that violates FCC rules, as taught by Tigwell (Ans. 4).

Appellant argues that Tigwell teaches away from combination with Harrington because implementing the modification proposed by the Examiner "would mean adding microprocessors and associated software/firmware in the repeater unit 5 and the means 4 of the system disclosed in Harrington" (Br. 8). Appellant correctly notes that the test to apply is whether a person of ordinary skill in the art, upon reading Tigwell, would be discouraged from following the path set out in Tigwell (*see In re Gurley, supra*). We agree with the Examiner, however, that Appellant's argument is not persuasive, because Appellant has not identified any teaching in Tigwell that would criticize, discredit, or otherwise discourage the solution claimed in the application (Ans. 12). *Fulton*, 391 F.3d at 1201. Appellant's only support for his argument is his opinion that a "redesign"

would be required (Br. 9). In the absence of evidentiary support in the prior art, we decline to adopt Appellant's opinion.

Appellant also argues that Eisaku and Smith teach away from combination with Harrington, for the same reasons presented with respect to Tigwell (Br. 10, 12). We find these arguments unpersuasive as well, because Appellant cites no evidence in Eisaku or Smith to support his contention that the skilled artisan would be led in a divergent direction. We therefore do not agree with Appellant that either Eisaku or Smith teaches away from the Examiner's asserted combination with Harrington.

Appellant argues that there is no motivation to modify Tigwell to adopt the signal format disclosed in Eisaku (Br. 11). We do not find Appellant's argument persuasive, because the Examiner has provided ample reason to make the modification, *i.e.*, to send IR carrier frequency information instead of directly modulating an RF carrier with the IR carrier frequency to avoid violation of FCC regulations (Ans. 15).

Because we find that the combination of Harrington, Tigwell, Eisaku, and Smith teaches all of the limitations of claim 19, and because we agree with the Examiner's reasons why the person having ordinary skill in the art would have been motivated to combine the references, we do not find error in the Examiner's rejection of claim 19, nor of claims 23-28 and 33-37 not separately argued, under 35 U.S.C. § 103(a).

§ 103 rejection over Thomas, Tigwell, Eisaku, and Smith

We select claim 19 as representative of this group, pursuant to our authority under 37 C.F.R. § 41.37(c)(1)(vii).

As with Harrington, Appellant argues that since Thomas uses FM transmission rather than AM, there would be no motivation to modify Harrington to include the teachings of Tigwell (who uses AM), because the problem of violating FCC regulations asserted by the Examiner would not exist (Br. 15). We are not persuaded by Appellant's argument because, as explained in the Examiner's Answer, the violation of FCC regulations does not arise because of the use of amplitude modulation rather than frequency modulation, but because the transmitted signal would occupy too great a bandwidth to comply with FCC regulations if the IR carrier frequency were simply converted into RF and transmitted (Ans. 9-11, 17-18). We therefore agree with the Examiner's statement that one of ordinary skill would have been motivated to encode an IR carrier frequency in a short message, as taught by Eisaku, to avoid sending a RF signal in a bandwidth that violates FCC rules, as taught by Tigwell (Ans. 17).

Appellant argues that because the battery transceiver in Thomas receives the RF signal, rather than the IR signal, the battery transceiver could not determine an IR carrier frequency using the method taught in Smith. Claim 19, however, recites "means for extracting an IR carrier frequency from the first control signal." We agree with the Examiner's position that "the first control signal can be an RF signal and the IR carrier frequency information can be encoded as data to be included in the RF signal" (Ans. 18), and that extraction of IR carrier frequency information from an RF signal is taught by Eisaku (FF 10). As a result, we find that the Examiner's asserted combination teaches every element of claim 19.

We therefore do not find error in the Examiner's rejection of claim 19, nor in the rejection of claims 20, 22, 33-35, 37, and 38 not separately argued, as being obvious over Thomas in view of Tigwell, Eisaku, and Smith.

Claims 29-32

Appellant argues only that Anderson does not supply the teachings alleged to be missing from the proposed rejection of parent claim 19. Because we sustain the rejection of claim 19, *supra*, we sustain the rejection of dependent claims 29-32 as well, for the same reasons expressed with regard to claim 19.

CONCLUSION OF LAW

We conclude that Appellant has not shown that the Examiner erred in rejecting claims 19, 20, and 22-38.

DECISION

The Examiner's decision rejecting claims 19, 20, and 22-38 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

tdl/gw

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